

WHAT IS CLAIMED IS:

1. A method of producing a biopolymeric array comprising immobilizing at least a first population of a number of copies of a first probe for a first target to a surface of a solid support, wherein said number of said first population is dependant on the at least anticipated abundance of said target in a sample for which said array is designed to assay.
2. The method of Claim 1, wherein said at least first population is present in at least one feature comprising a density of said probe copies that ranges from about .001 pmoles/mm<sup>2</sup> to about 10 pmoles/mm<sup>2</sup>.
3. The method of Claim 2, wherein said at least first population is present in at least two replicate features.
4. The method of Claim 3, wherein each of said replicate features comprises a density of said probe copies that ranges from about .001 pmoles/mm<sup>2</sup> to about 10 pmoles/mm<sup>2</sup>.
5. The method of Claim 1, wherein said number of probe copies of said at least first population ranges from about  $6 \times 10^4$  probes/feature to about  $6 \times 10^{12}$  probes/feature.
6. The method of Claim 1, wherein said number of probe copies of said at least first population is chosen so as to provide a particular signal to noise ratio for an array assay using said biopolymeric array.
7. The method of Claim 1, wherein said method further comprises performing a first assay with said sample to determine said at least anticipated abundance of said target.
8. The method of Claim 7, wherein said first assay is performed with an array.
9. The method of Claim 8, wherein said array is a genome-wide array.
10. The method of Claim 1, wherein said probe copies are nucleic acids.
11. The method of Claim 1, wherein said probe copies are polypeptides.

12. The method of Claim 1, wherein said method further comprises immobilizing at least a second population of a number of copies of a second probe for a second target, wherein said number of probe copies of said second population is dependant on the at least anticipated abundance of said second target in said sample for which said array is designed to assay.
13. The method of Claim 12, wherein said first target is at least suspected of being present in a higher abundance than said second target in said sample and said number of probe copies of said first population is less than the number of probe copies of said second population.
14. The method of Claim 12, wherein said first target is at least suspected of being present in a higher abundance than said second target in said sample and said density of said first population is less than the density of said second population.
15. A method of preparing a biopolymeric array, said method comprising:
  - (a) determining the relative abundance of targets in a sample type for which said array is designed to be used; and
  - (b) immobilizing populations of different probes for respective targets at relative numbers which are dependent upon the relative abundance of said targets.
16. A method of preparing a biopolymeric array, said method comprising:
  - (a) determining the relative abundance of targets in a sample type for which said array is designed to be used; and
  - (b) immobilizing populations of different probes for respective targets at relative total feature areas which are dependent upon the relative abundance of said targets.
17. A biopolymeric array comprising at least a first population of a number of copies of a first probe for a first target immobilized on a surface of a solid support, wherein said number of probe copies is dependant on the at least anticipated abundance of said target in a sample for which said array is designed to assay.

18. The biopolymeric array of Claim 17, wherein said at least first population is present in at least one feature comprising a density of said probe copies that ranges from about .001 pmoles/mm<sup>2</sup> to about 10 pmoles/mm<sup>2</sup>.
19. The biopolymeric array of Claim 17, wherein said at least first population is present in at least two replicate features.
20. The biopolymeric array of Claim 19, wherein each of said replicate features comprises a density of said probe copies that ranges from about .001 pmoles/mm<sup>2</sup> to about 10 pmoles/mm<sup>2</sup>.
21. The biopolymeric array of Claim 17, wherein said number of probe copies of said at least first population ranges from about  $6 \times 10^4$  probes/feature to about  $6 \times 10^{12}$  probes/feature.
22. The biopolymeric array of Claim 17, wherein said number of probe copies of said at least first population is chosen so as to provide a particular signal to noise ratio for an array assay using said biopolymeric array.
23. An array produced according to the method of Claim 1.
24. A method of detecting the presence of a target in a sample, said method comprising:
  - (a) contacting a biopolymeric array according to Claim 17 with a sample at least anticipated to comprise said first target under conditions sufficient for binding of said first target to said probe copies on said array to occur; and
  - (b) detecting the presence of binding complexes on the surface of said array to detect the presence of said first target in said sample.
25. The method according to Claim 24, wherein said probe copies and target are nucleic acids.
26. The method according to Claim 24, wherein said probe copies and target are polypeptides.

27. The method of Claim 24, wherein said detecting comprises detecting signal from said probe copies and combining said signals to produce one signal that is representative of said at least one target.

28. The method of Claim 27, wherein said probe copies are present as at least two replicate features and said one signal is produced by determining an average signal for said at least two replicate features.

29. A method comprising transmitting data from a method of claim 24 from a first location to a second location.

30. The method according to Claim 29, wherein said second location is a remote location.

31. A method comprising receiving a transmitted result of a reading of an array obtained according to the method Claim 24.

32. A method comprising:

(a) immobilizing at least a first population of a number of copies of a probe for a first target to a surface of a solid support to prepare a biopolymeric array, wherein said number of probe copies of said first population is dependant on the at least anticipated abundance of said first target in a sample for which said array is designed to assay, and

(b) performing an array assay with said biopolymeric array.

33. A computer readable medium comprising an algorithm for performing at least a portion of the method of Claim 24.

34. A computer readable medium comprising an algorithm for performing at least a portion of the method of Claim 27.

35. A kit for use in an array assay, said kit comprising:

(a) at least one biopolymeric array comprising at least a first population of a number of copies of a first probe for a first target immobilized on a surface of a solid support, wherein said number of probe copies is dependant on the at least anticipated

abundance of said target present in a sample for which said at least one biopolymeric array is designed to assay; and

- (b) instructions for using said biopolymeric array in an array assay.